Report on attendance at

Symposium on Nucleic Acids
Regional Research Laboratory
Hyderabad, India

Sponsored by Council on Scientific and Industrial Research
New Delhi, India

Dates January 16 through 23, 1964

Other laboratories visited

1. Biochemistry Section
   Biology Division
   Atomic Energy Establishment
   Bombay
   Dr. M. B. Sahasrabudhe

2. Department of Biochemistry
   All India Institute of Medical Sciences
   New Delhi
   Dr. G. P. Talwar

3. Biochemistry Department
   Bose Institute
   Calcutta
   Dr. Debi P. Burma

The Symposium was organized by Dr. P. M. Bhargava, an Assistant Director of the Regional Research Laboratory, Hyderabad. Dr. Bhargava is concerned with the biochemical basis of intercellular organization and has recently investigated the uptake of RNA by liver cells. He did postdoctoral training at the University of Wisconsin with Dr. Charles Heidelberger. The expressed purpose of the Symposium was (1) to provide a meeting place for investigators from all over the world who are concerned with the extremely active area of nucleic acid research and (2) to stimulate the interest in and quality of work in this field by Indian workers. In the course of the week approximately 35 research papers were presented by foreign and Indian participants

(see attached list). There was ample time for discussion of each paper by the participants and some 70 observers from laboratories all over India. The wide scope of the papers even within the limited area of nucleic acids, allowed for very interesting exchanges of views and comments by the participants. The foreign participants were, by and large, very active research workers of outstanding international reputation. From my own point of view, therefore, the Symposium was stimulating and worthwhile. In addition, the hospitality shown by the Indian hosts and the arrangements for accomodations were outstanding.

Whether or not the meeting was a success with regard to the second objective mentioned above is much more difficult to assess. Indeed, certain problems concerning our Indian colleagues--both the participants and observers--make one wonder whether such an objective is attainable at present in India. Although what follows represents my own opinions and observations, conversations with the other foreign participants indicated that we all arrived at similar conclusions.

The papers presented by the Indian participants did not, in general, meet the standard set by the foreign visitors. Often the approach to the problem in question was unsophisticated. In many cases the experiments performed were not properly designed to answer the questions asked. In other cases the questions themselves were either not properly defined or were so complex as to be impossible to answer given presently available experimental possibilities. Lack of good critical evaluation of the data was common. Those Indian workers

giving papers represented, mainly, senior people who are directors of good sized laboratories. In many cases it appeared that the actual work had been done by their more junior colleagues.

The more senior Indian scientists took active part in the open discussion of the various papers. However, their contributions to the discussion were usually uncritical and did not show the same enthusiasm for the subject common in their visitors. Thus, while they seemed willing to consider the interpretations and ramifications of the particular experiments presented, they rarely criticized the experiments themselves. Data was accepted at face value. The assumptions of the investigator, the methods themselves, the relation between the actual experiment and the problem posed was rarely considered. These were, of course, just those qualities lacking in their own work.

Several factors appear to contribute to the poor quality of nucleic acid research in India. Most of the Indian investigators complained of their inability to acquire the fine chemicals and instruments required for their work. In those cases where such equipment is available, months elapse between the placement of the order and delivery. Two reasons were commonly stated for this situation: (1) the foreign exchange situation, and (2) government red tape (most of the people worked in government laboratories). Certainly this equipment problem may be partly responsible for the unproductive research effort, however, several other factors appeared to be of more basic importance.

Some of my earlier comments concerning specific problems with the approach to research may perhaps be summarized by stating that the authority of information or data produced by others is not generally questioned. And this seems to fit with a general cultural problem of the status of authority both within and without the scientific community. Thus, for example, it was rare indeed for one of the younger or less prestigious observers to participate in the discussion at all; they seemed quite inhibited by the presence of both the visitors (some of whom were even more youthful) and their own superiors. This was in marked contrast to the customary behavior of young American scientists. Furthermore, the inclination to accept authority can hardly foster imaginative scientific investigations. As part of this same picture, the visitor definitely got the impression that the availability of jobs and promotions within the scientific community were dependent, to a significant degree on "proper" behavior, or good scientific politicking, or proper paper credentials. Little independence is offered to younger people so that the stimulation of personal achievement is lacking.

If all of this sounds discouraging with regard to the possibility of good basic research coming out of India, then I have reported my own impression accurately. This seems especially unfortunate as the Indian government appears to have adopted a policy of providing for basic research. The scientific problems seem to arise from basic elements in Indian culture, religion, and society as, for example, the role of authority within the family. Another factor which may

also be involved is the notion, quite opposite to our own puritanical heritage, that work itself is somehow degrading. One has the impression that people, in general, don't work very hard--at least by our standards.

It should be pointed out that training abroad does not necessarily help matters. Several of those Indians who presented poor papers had had earlier training in good laboratories in the West, and had turned out creditable work in the process. Thus, it seemed to me that if the Indians really want to continue their investment in basic biological research and make it worthwhile, it would be more useful to have Westerners go to India to work for periods of several years than to keep sending Indians abroad. The visitors could offer rigorous formal instruction, they could attempt to reach the younger people and stimulate them to question at least scientific authority, they could be an example to whole laboratories, that respectable and respected individuals roll up their sleeves and put in long, hard hours in the laboratory. They might also begin to shake the strict hierarchy within the laboratories so that young, independent investigators can develop.

Before closing I must add a bit on the one lab I visited which appeared to suffer least from such considerations as I mentioned. This was the Bose Institute in Calcutta. The three papers delivered at the Symposium by representatives of this institution were, in my opinion, the finest of those presented by Indian workers and indeed compared favorably with papers presented by the visitors. Later, when

I visited the Biochemistry Department of Bose Institute, it seemed to be a relatively busy place; the equipment, though modest, was all in use, and the scientists were a lively, interested bunch. The director of the laboratory, Dr. Bose, though an elderly man, seemed interested and well informed on the scientific pursuits of his staff. It may or may not be pertinent that this institution was originally set up with private funds, and is at present run as a private institution albeit with some financial assistance from the government.

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